

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) Read/write transducer for a hard disk drive, comprising:

a supporting body configured to be affixed to a microactuator so as to be movable with respect to an E-block of the hard disk drive;

a read/write head carried by the supporting body; and

an optically detectable structure coupled to the supporting body and structured to cooperate with optical measurement means to determine a position of the read/write head relative to the E-block.

2. (Currently Amended) Read/write transducer according to claim 1, wherein said optically detectable structure comprises a pattern of elements having different optical properties.

3. (Original) Read/write transducer according to claim 1, wherein said optically detectable structure comprises zones that reflect an incident electromagnetic radiation alternating with zones non-reflective to said incident electromagnetic radiation.

4. (Original) Read/write transducer according to claim 1, wherein said optically detectable structure comprises a succession of crests and depressions alternating with one another.

5. (Original) Read/write transducer according to claim 1, wherein said optically detectable structure comprises a grating.

6. (Original) Read/write transducer according to claim 1, wherein said optically detectable structure is carried by said supporting body.

7. (Original) Read/write transducer according to claim 6, wherein said optically detectable structure is integral with said supporting body.

8. (Currently Amended) Read/write transducer ~~according to claim 1, for a hard disk drive according to claim 1, further comprising at least one hard disk and means for supporting and positioning said read/write transducer) at least one microactuator~~, said supporting body presenting a generally parallelepipedal shape with a bottom face turned towards said hard disk, an upper face coupled to said ~~supporting and positioning means~~microactuator, and four side faces, wherein said optically detectable structure is arranged on one of said side faces of said supporting body.

9. (Currently Amended) ~~Process-A~~ manufacturing process for manufacturing a read/write transducer for a hard disk drive, comprising the steps of:

providing a supporting body configured to be affixed to a microactuator coupled to an E-block of the hard disk drive;

applying a read/write head on said supporting body; and

providing, on the supporting body, an optically detectable structure designed configured to cooperate with optical measurement means for determining a position of the read/write head, relative to the E-block.

10. (Canceled)

11. (Currently Amended) Manufacturing process according to claim 9, ~~for a hard disk drive, comprising:~~

providing at least one hard disk;

providing an E-block;

coupling a microactuator to the E-block and means for supporting and positioning said read/write transducer;

affixing the supporting body to the microactuator, said supporting body presenting a generally parallelepipedal shape with a bottom face turned towards said hard disk, an upper face coupled to said supporting and positioning means microactuator, and four side faces, wherein providing and said optically detectable structure includes forming the optically detectable structure is formed on one of said side faces of said supporting body.

12. (Currently Amended) Manufacturing process according to claim 9, wherein said step of providing an optically detectable structure comprises the step of forming, on the supporting body, a pattern of elements having different optical properties.

13. (Currently Amended) Manufacturing process according to claim 9, wherein said step of providing an optically detectable structure comprises the step of forming, on the supporting body, zones that reflect an incident electromagnetic radiation alternating with zones non-reflective to said incident electromagnetic radiation.

14. (Currently Amended) Manufacturing process according to any one of the claims from claim 9 wherein said step of providing an optically detectable structure comprises the step of forming, on the supporting body, a succession of crests and depressions alternating with one another.

15. (Currently Amended) Manufacturing process according to claim 9, wherein said step of providing an optically detectable structure comprises the step of forming a grating on the supporting body.

16. (Currently Amended) Manufacturing process according to claim 15, wherein said step of forming a grating comprises the steps of:
depositing an oxide layer on a face of said supporting body;

defining said layer of oxide using a mask reproducing the pattern of said grating;
and
metallizing the defined oxide layer.

17. (Original) Manufacturing process according to claim 15, wherein said step of forming a grating comprises the steps of:

defining a face of said supporting body using a mask reproducing the pattern of said grating; and
metallizing said defined face.

18. (Currently Amended) Hard disk drive comprising:
a hard disk;
a read/write transducer;
an E-block configured to selectively position the transducer relative to the hard disk;

means for supporting and positioning moving said read/write transducer relative to the E-block; and

an optically detectable structure carried by either said read/write transducer or said supporting and positioning moving means and designed configured to cooperate with optical measurement means.

19. (Original) Hard disk drive according to claim 18, wherein said optically detectable structure is a pattern of elements having different optical properties.

20. (Original) Hard disk drive according to claim 18, wherein said optically detectable structure is carried by said read/write transducer.

21. (Original) Hard disk drive according to claim 20, wherein said optically detectable structure is integral with said read/write transducer.

22. (Original) Hard disk drive according to claim 20 wherein said read/write transducer comprises a supporting body and a read/write head, said optically detectable structure being carried by said supporting body.

23. (Currently Amended) Hard disk drive according to claim 22, wherein said supporting body has a generally parallelepipedal shape with a bottom face turned towards said hard disk, an upper face coupled to said supporting and positioning moving means, and four side faces, and wherein said optically detectable structure is arranged on one of said side faces of said supporting body.

24. (Currently Amended) Optical system for measuring the position of a read/write transducer for a hard disk drive comprising:

means for supporting and positioning said read/write transducer;
an optically detectable structure carried by either said read/write transducers or said supporting and positioning means; and

optical measurement means cooperating with said optically detectable structure for measuring the position of said read/write transducer relative to an E-block of said hard disk drive.

25. (Original) Optical measuring system according to claim 24, wherein said optically detectable structure is a pattern of elements having different optical properties.

26. (Original) Optical measuring system according to claim 24, wherein said optical measurement means comprise laser transmitter means designed to generate, and direct towards said optically detectable structure, a laser beam, and laser receiver means arranged in such a way as to intercept a laser beam reflected by said optically detectable structure.

27. (Original) Optical measuring system according to claim 26, wherein it comprises optical guide means having a first end optically coupled to said laser transmitter

means and a second end supported to direct said laser beam towards said optically detectable structure and to intercept said laser beam reflected by said optically detectable structure.

28. (Currently Amended) Optical measuring system according to claim 27, ~~for a hard disk drive~~ ~~further comprising a plurality of hard disks, and wherein the supporting and positioning means is one of~~ a plurality of means for supporting and positioning respective read/write transducers, ~~wherein the optically detectable structure is one of a plurality of optically detectable structures, each carried by either one of said respective read/write transducers or one of said supporting and positioning means, and wherein it~~ ~~the optical measuring system~~ further comprises means for moving said second end of said optical guide means for placing it at ~~one of~~ ~~said plurality of~~ optically detectable structures carried by ~~said supporting and positioning means or by the respective read/write transducers.~~

29. (Original) Optical measuring system according to claim 24, wherein said optically detectable structure is carried by said read/write transducer.

30. (Original) Optical measuring system according to claim 29, wherein said optically detectable structure is integral with said read/write transducer.

31. (Currently Amended) A device comprising:
a read/write transducer for a hard disk drive;
~~a structure configured to move the transducer with respect to an E-block of the hard disk drive;~~
an optically detectable structure coupled with the transducer;
means for detecting light reflected by the optically detectable structure and for interpreting, from the reflected light, the position of the transducer relative to the ~~detection means~~ ~~hard disk drive.~~

32. (Original) The device of claim 31, wherein the optically detectable structure is a pattern of elements having different optical properties.

33. (Original) The device of claim 31, wherein the read/write transducer comprises a supporting body and a read/write head.

34. (Currently Amended) The device of claim 33, wherein the read/write head comprises a unitary body and the optically detectable structure is integral to theformed therein read/write head.

35. (Currently Amended) A method, comprising:
directing a light beam at an optically detectable structure coupled with a read/write transducer of athe hard disk drive;
detecting the light beam reflected from the optically detectable structure; and
determining the position of the transducer, relative to a suspension of the read/write transducer, by analysis of characteristics of the reflected light beam.

36. (Original) The method of claim 35, wherein the optically detectable structure is a pattern of elements having different optical characteristics.

37. (New) The method of claim 35, further comprising determining the position of the transducer relative to the hard disk drive.

38. (New) The method of claim 35, further comprising:
directing an additional light beam at an additional optically detectable structure coupled with an additional read/write transducer of the hard disk drive;
detecting light reflected from the additional optically detectable structure; and

determining the position of the additional transducer, relative to a respective suspension, by analysis of characteristics of light reflected from the additional optically detectable structure.

39. (New) Hard disk drive of claim 18 wherein the supporting and positioning means is a microactuator.

40. (New) The device of claim 31 wherein the detection means includes means for interpreting, from the reflected light, the position of the transducer relative to the E-block.

41. (New) A positioning device for determining a position of a read/write head of a disk drive, comprising:

first locating means for locating, to a first, lower, degree of accuracy, a position of the read/write head relative to the hard disk drive; and

second locating means for locating, to a second, higher, degree of accuracy, the position of the read/write head relative to the hard disk drive.

42. (New) The device of claim 41 wherein the first locating means comprises a spin stand.

43. (New) The device of claim 41 wherein the second locating means are configured to be movable in a first axis parallel to a second axis defined by positions of a plurality of read/write heads coupled to an E-block of the disk drive.

44. (New) The device of claim 41 wherein the second locating means comprises a light source coupled to the first locating means and configured to direct light onto a support body of the read/write head.

45. (New) The device of claim 44 wherein the light source comprises a laser.

46. (New) The device of claim 44 wherein the second locating means comprises detecting means for detecting reflection, from the support body, of the directed light.

47. (New) The device of claim 46 wherein the detecting means is configured to detect variations in character of light reflected from the support body.

48. (New) The device of claim 41 wherein the first and second locating means are configured to cooperate with components of the disk drive to position the read/write head relative to a disk of the disk drive.

49. (New) A device, comprising:

an E-block configured to support a plurality of read/write heads associated with a disk drive and having a surface on an arm thereof; and

a grating structure integrally formed on the E-block and including reflective regions and non-reflective regions defined on a surface of the E-block, the grating structure configured to provide varying characteristics of reflection of electromagnetic radiation according to an incident angle of the radiation with respect to the surface.

50. (New) The device of claim 49 wherein the grating structure comprises regions of the surface having an oxide layer formed thereon.

51. (New) The device of claim 49 wherein the grating structure comprises etched regions of the surface.

52. (New) The device of claim 49 wherein the arm of the E-block comprises a suspension configured to support one of the plurality of read/write heads, and wherein the surface is formed on the suspension.

53. (New) A device, comprising:
a slider of a disk drive; and
an optical grating formed as a unitary part of a body of the slider.

54. (New) The device of claim 53 wherein the grating comprises alternating
reflective and non reflective regions defined on the body.